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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,141	12/31/2003	Mineo Yamakawa	21058/0206675-US0	7926

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EXAMINER	
MCCRACKEN, DANIEL	
ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
12/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/750,141	YAMAKAWA ET AL.	
	Examiner	Art Unit	
	DANIEL C. MCCRACKEN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,8,9,11,15-21 and 39-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,8,9,11,15-21 and 39-41* is/are rejected.

7)☐ Claim(s) *15 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Citation to the Specification will be in the following format: (S. # : ¶/L) where # denotes the page number and ¶/L denotes the paragraph number or line number. Citation to patent literature will be in the form (Inventor # : LL) where # is the column number and LL is the line number. Citation to the pre-grant publication literature will be in the following format (Inventor # : ¶) where # denotes the page number and ¶ denotes the paragraph number.

Response to Arguments, Remarks

Status of the Application

This Office Action is in response to both Applicants remarks filed 6/9/2008, and Applicants declaration filed 10/2/2008. Applicants response of 6/9/2008 made reference to a forthcoming (but never received) declaration. As such, the Examiner held the response non-compliant. Applicants' declaration of 10/2/2008 followed. This set of remarks and declarations was in response to a non-final office dated 1/8/2008.

The latest set of claims filed on 6/9/2008 list Claim 1 as "previously presented," while apparently inserting a comma or failing to remove the underlining from a comma previously inserted. Likewise, it would appear as if Applicants have deleted an "a" from limitation (d). In this sense, the status identifiers are incorrect. The Examiner is waiving the requirement for correct status identifiers in this reply, but Applicants are expected to comply in future prosecution.

Claim Rejections - 35 U.S.C. 112

With respect to the enablement rejection, Applicants traversal is on the grounds that "[t]he specification enables the full scope of these claims." (Remarks of 6/9/2008 at 7). Of course, this isnt an actual traversal – rather it is a conclusory statement. Applicants allege that because various pieces of the claims are taught in the prior art, the claims must be enabled.

With respect to the second Wu declaration, filed 10/2/2008, the Examiner has considered the declaration, but it is not persuasive. As noted with respect to the first Wu declaration, the Declarant is not a disinterested party and rather is an employee of the assignee of the instant application (Intel). With respect to paragraph 5 of the Wu declaration, the Examiner did request the declaration, but *only after Applicants repeated over and over they were going to provide it and did not*. While Applicants have provided 4 journal articles (Muir, Christopoulos, Wittstock, and Dai), one US patent (Bensimon), and two unknown exhibits (Exhibits B & E) with apparently no attribution. Of these, Dai and Muir appear to be the only two actually disclosed in the Specification.

Assuming *arguendo* that everything described in all of the journal articles can be carried out, the articles (insofar as the Examiner could determine and insofar as the declaration set forth) do not address the "non-random" limitations in the claim. This term is not entirely clear. It would appear as if Applicants (and everyone else) can put the gold particles on a substrate in a non-random manner via sputtering, lithography and the like. Assuming – again *arguendo* – that Applicants can attach their DNA to these gold particles, how is location of the ferretin/catalyst from this attachment is "non-random?" What makes it non-random? Can Applicants demonstrate

any degree of predictability with attaching a ferretin molecule to non-random locations on their DNA? This is not understood in light of Applicants disclosure and declarations.

Applicants have *again* not presented any experimental evidence. This is highly probative to the rejection. The journal articles that allegedly support the claims span a variety of fields of art, making the experimental evidence factor of the *In re Wands* inquiry especially important. In this field, it is highly unusual to submit a patent application without a single working example. Those of skill in the nanotube art are normally chemists. It is not reasonable to assume they have extensive knowledge of DNA. Furthermore, there are additional questions that remain unanswered. It is well known and axiomatic that carbon nanotube diameters are controlled by catalyst size. Applicants appear to recognize as much. *See* (S. 8: [0028]). Is there enough ferretin "bonded" to Applicants DNA to grow a nanotube? Is it even possible to bond enough ferretin to a strand of DNA to grow a nanotube? Note that the articles Applicants cite for the principle that "because the word 'ferretin' is there, that means you can grow nanotubes" employ radically different processes. For example, Li et al. create a ferretin solution and deposits drops of this onto a substrate. *See* Li, et al., *Growth of Single-Walled Carbon Nanotubes from Discrete Catalytic Nanoparticles of Various Sizes*, J. Phys Chem B. 2001; 105: 11424, 11425. How do you bond enough ferretin to DNA to deposit enough iron to grow a carbon nanotube? This would seem to be a rather important issue that Applicants would have encountered had they actually performed the claimed method. Likewise, this would seem to be a rather important piece of information that the public would need to practice this invention. The specification lacks this information.

Furthermore, in traversing the obviousness rejection, Applicants felt it especially important to remind the Examiner of the "reasonable expectation of success" when the Examiner rejected the Applicants over their own admissions. Its either one or the other - its either predictable or its not. If it is, perhaps the case is enabled but obvious. If its not, the case is non-enabled but novel and non-obvious. If Applcants can perform this method, then by all means do it, take a picture, put the info in a declaration and submit it to the Office. This should not be burdensome given that – at least as reflected in their oath – they claim to be the first to invent this method. The Examiner would consider this information highly probative. The specification doesn't do this, leaving the public with a collection of journal articles and patents they were already in possession of.

Claim Rejections - 35 U.S.C. 103

Applicants state "the Examiner has done no more than list twenty-four excerpts from the specification which describe prior art techniques that may be employed in the practice of the presently claimed invention." (Remarks of 6/9/2008 at 9). Replace "the specification" with "other people's journal articles," and the same might be said of Applicants.

If every step is old and known, and "a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability." *KSR v. Teleflex*, 550 U.S. __, 82 USPQ2d 1385, 1398 (2007). If there is some unpredictability in implementing these techniques, then this information should be brought to the Examiner's attention. Of course, this would information would be relevant to the enablement analysis. Putting a catalyst on a substrate to grow nanotubes is so ubiquitous, that predictable methods of doing this are non-inventive.

There are no secondary indicia that weighs in Applicants favor. By eschewing experimental work for a literature survey, Applicants have precluded themselves from arguing any unexpected results as they have none to argue.

Claim Objections

Claim 15-16 are objected to because of the following informalities: they depend from a claim now cancelled (Claim 14). Appropriate correction is required.

Claim Rejections - 35 USC §§ 103, 112

The rejections as set forth in the non-final office action dated 1/8/2009 are expressly incorporated herein by reference.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

All amendments made in response to this Office Action must be accompanied by a pinpoint citation to the Specification (i.e. page and paragraph or line number) to indicate where Applicants are drawing their support.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL C. MCCRACKEN whose telephone number is (571)272-6537. The examiner can normally be reached on Monday through Friday, 9 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel C. McCracken/
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Examiner, Art Unit 1793
DCM

/Stuart Hendrickson/
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Primary Examiner